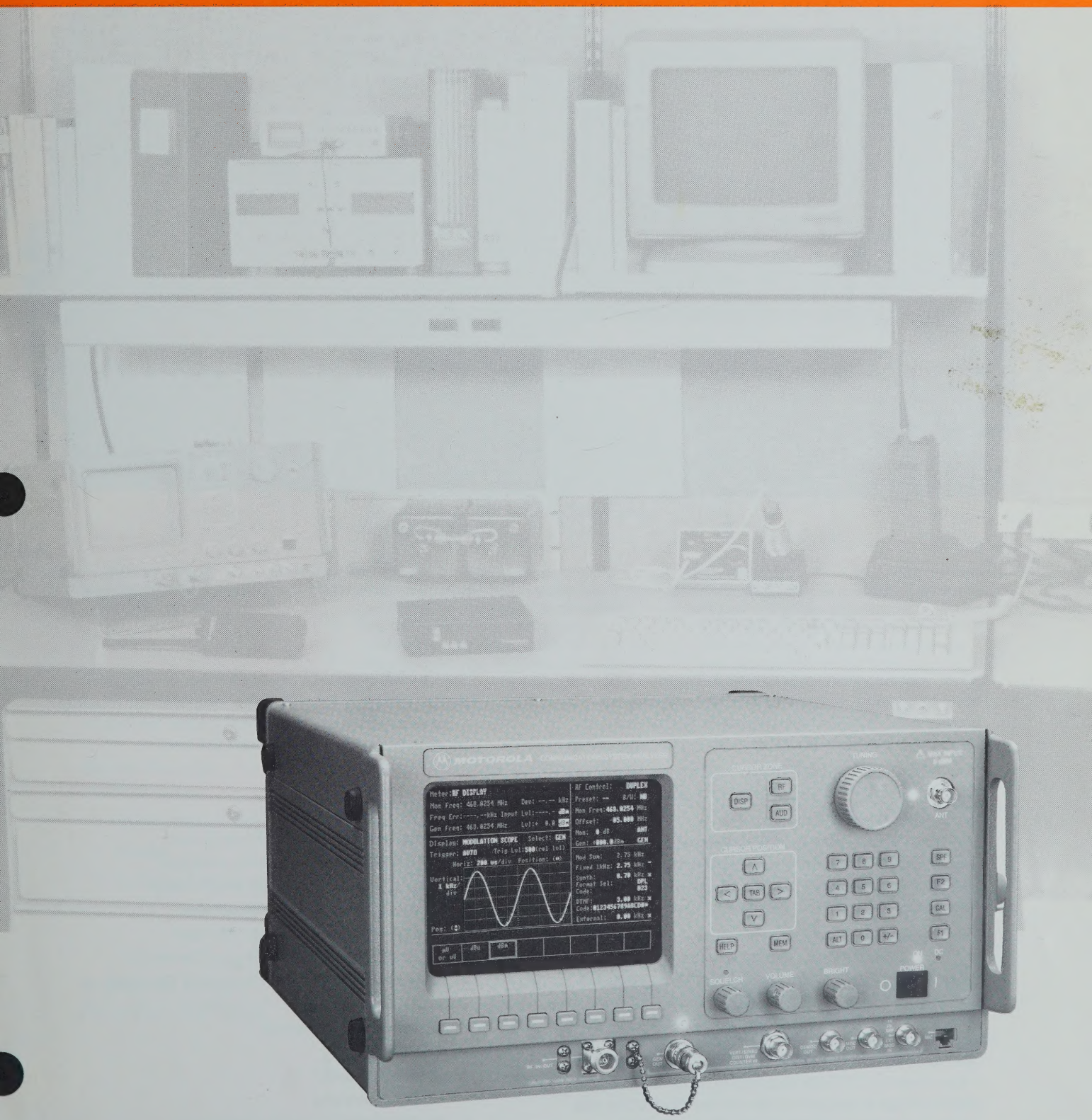
| Eq.Cat. | Sec. | Item |
|---|---|---|
| R3 | 9 | 88B |

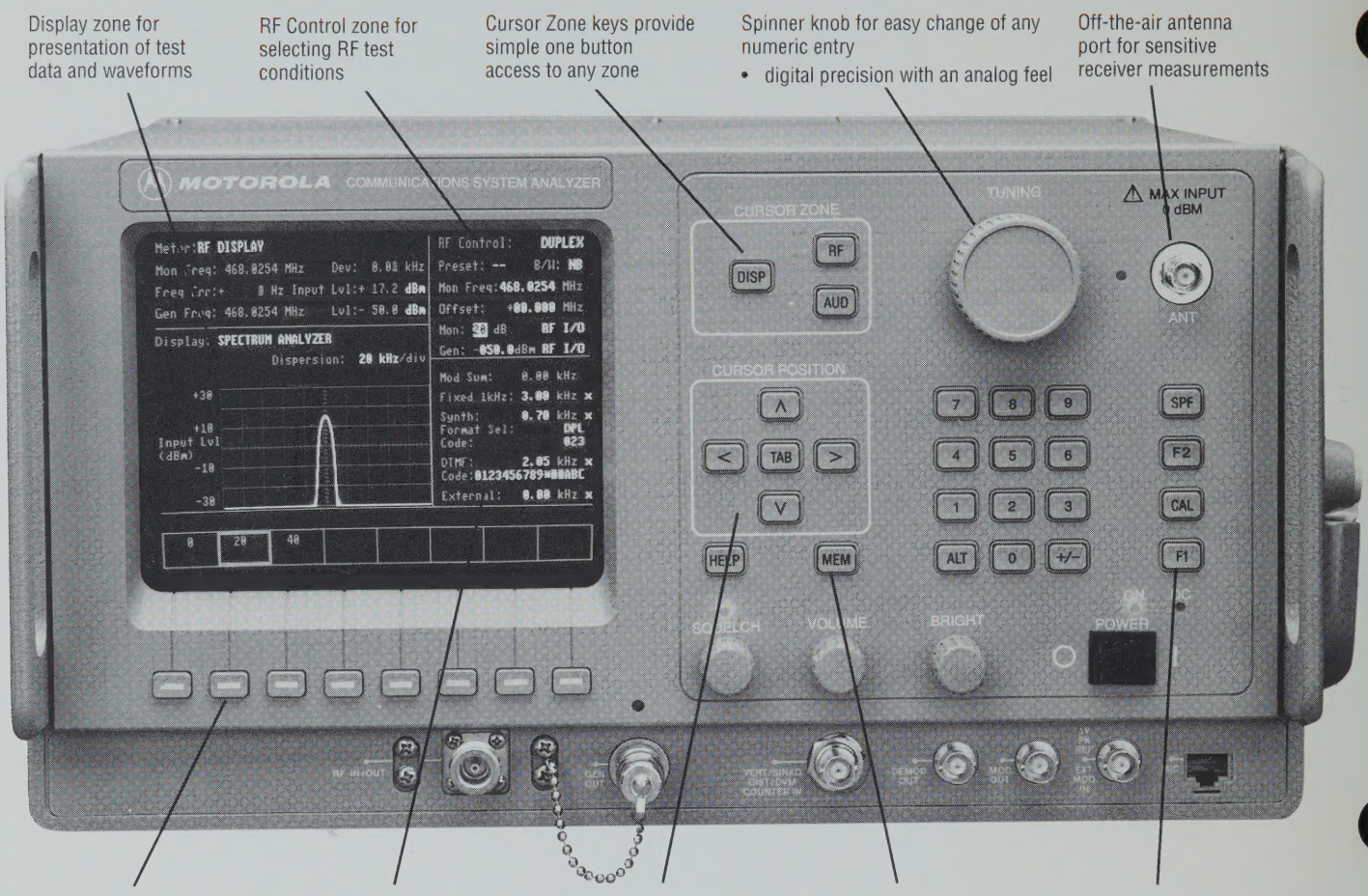
MOTOROLA

# R-2550

## *Communications System Analyzer*



# R-2550 ... THE NEW STANDARD FOR VAL




When your customers want their radios repaired fast, repaired right and repaired for less, Motorola has the answer – our R-2550 Communications System Analyzer. It's the **new standard for value** in testing two-way radios.

You get high performance, state-of-the-art test instrumentation, plus Motorola's award winning quality, all at a price so low it will surprise you.

The R-2550 comes packed with an impressive list of features which allow you to quickly solve conventional two-way radio service problems. And it's one of the best values ever offered to the service community!

The new R-2550 accelerates your radio testing time, improving your efficiency. Our design provides a fully variable output level duplex generator and automatically calibrated spectrum analyzer. These valuable features, used with our auto-calibrated field strength meter, provide instant access for the most detailed on-site maintenance. And you'll find the R-2550 very easy to use. Its large 7-inch diagonal CRT, lightweight and portable styling, digital storage scope, and extensive use of windows and softkeys give you a degree of flexibility unmatched in today's test instrumentation.

The R-2550 gives you unparalleled value: innovative design, extensive list of features, low price. And now that you see what's possible in a field portable test instrument, is there any reason to settle for less?

## Key Features

- **Large 7" Diagonal CRT**
- **Portable and lightweight at 33 lbs.**
- **Auto Calibrated Spectrum Analyzer**
- **Auto Calibrated Field Strength Meter**
- **Variable Level Duplex Generator**
- **Digital Oscilloscope with Storage**
- **1 GHz Synthesized RF Signal Generator**
- **Sensitive "Off the Air" Scanning Receiver**
- **AC/DC Voltmeter**
- **Terminating Wattmeter**
- **SINAD Meter**
- **Distortion Meter**
- **Audio Generator**
- **PL/DPL/DTMF Encoder/Decoder**
- **Memory Storage**

# E IN CONVENTIONAL TWO-WAY TESTING

| Feature | Description | Benefits |
|---|---|---|
| **Duplex Generator**<br>• Variable Level Control<br>• Single Port<br>• Up to ±55 MHz Offset | Full output level control from –130 dBm to 0 dBm over the entire range of the instrument is available from the RF I/O port (–130 dBm up to –50 dBm) and the generator port (–80 dBm to 0 dBm). Variable offsets from 0 to ±55 MHz in 5 kHz steps are keypad selectable. | The duplex generator provides enhanced capability to service equipment such as repeaters and full duplex radios. Full RF level control as well as full internal and external modulation capability allows receiver (desensitization) and transmitter tests to be performed simultaneously through one port, if desired. Storage of test frequencies is available in memory for instant recall. |
| **Spectrum Analyzer (See & Hear)™**<br>• Auto Calibrated Frequency and Amplitude | The built-in Spectrum Analyzer of the R-2550 will display a window of RF spectrum anywhere within the 400 kHz to 1 GHz operating range of the unit. | You gain the significant advantage of spectrum visibility while being able to hear received signals. The Tuning knob retains control of the center frequency to perform fast sweeps or fine tuning. This allows the technician to quickly locate and identify signal carriers. This spectrum analyzer is a very powerful and effective tool for the technician. |
| **Field Strength Meter**<br>• Digital Readout<br>• Auto Calibrated | In addition to reading frequency error and modulation, a digital readout signal strength meter has been included. Sensitivity is specified to –95 dBm at the antenna port for FM signals and extends up to 125 watts at the RF I/O port. The CRT display will automatically convert to a terminating "watts" display as the level increases. | This feature, in conjunction with an external antenna, allows remote monitoring of distant transmitters to check for antenna, transmission line or P.A. problems. Many technicians also find this feature convenient in performing propagation studies to identify weak coverage areas. |
| **Scanning Receiver** | Scanning operates in the monitor mode and provides a function similar to a 20-channel scanner. This feature automatically scans user defined frequency presets to lock to the signal applied. Any RF carrier above 20 MHz can be scanned and the reception displayed with digital readouts. | It is possible to locate and identify the activity on your preset operating frequencies. By automatic-ally tuning the R-2550 receiver to the detected carrier, immediate measurement data can be taken without having to enter new frequency data via the keyboard. |
| **Digital Storage Oscilloscope**<br>• 50 kHz Bandwidth<br>• Freeze<br>• Variable Trigger | This oscilloscope has 50 kHz bandwidth for audio waveform analysis. The display can be triggered over the full screen range to a fixed reference level. Triggering in both automatic and normal modes is provided for synchronizing the horizontal timebase to the vertical input signal. Internal or external inputs allow observation of both generated and monitored modulation signals. | Recovered audio or internally produced audio can be displayed visually for deviation measurements. Additionally, detection of an asymmetric modulation or audio distortion can be achieved with waveform analysis. With internal and external inputs and a single sweep freeze display, this unit duplicates many features of more expensive scopes. |
| **10 MHz Tracking Generator (Optional)** | The combining of the capabilities of the sweep generator and the spectrum analyzer into a Tracking Generator function allows the user to view the performance characteristics of many RF filter devices. Display range is operator-selectable from a 200 kHz window up to a 10 MHz window anywhere in the 400 kHz to | Diagnosis and adjustment of critical receiver front ends, IFs, helical filters, cavities, combiners and duplexers can be made in a few minutes, quickly and easily, with the flexibility of the R-2550 tracking generator at your fingertips. |

## FEATURES

The following features are available on the new R-2550 Communications System Analyzer:

- Synthesized RF Signal Generator
- Sensitive "Off the Air" Receiver
- Preset Scanning Receiver
- See and Hear™ Spectrum Analyzer
- Synthesized Duplex Offset Generator
- AC/DC Digital Voltmeter
- Digital General Purpose Oscilloscope
- Terminated RF Wattmeter
- Signal Strength Meter
- SINAD Meter
- Distortion Meter
- Synthesized Audio Generator
- Memory Storage
- Self Calibration Routine Built In
- RS-232 Remote Control (Std.)
- Help Screens Built In

## SPECIFICATIONS

| **Power and Environmental** | |
|---|---|
| AC: | 100-130 VRMS or 200-260 VRMS @ 50 to 440 Hz |
| DC: | +11 to +16 VDC |
| Dimensions: | 8.52″ high x 16.24″ wide x 17.36" deep (21.6 cm x 41.2 cm x 44 cm) excluding battery pack and cover |
| Weight: | 33 lbs. (excluding cover) |
| Temperature: | 0° C to +50° C (operating) –40° C to 85° C (storage) |

| **Signal Generator** | |
|---|---|
| Modes: | AM/FM/DUPLEX |
| Freq. Range: | 400 kHz to 1 GHz |
| Resolution: | 100 Hz (5 kHz duplex offset) |
| Output Level: | –130 dBm to 0 dBm FM<br>–130 dBm to –6 dBm AM |
| Accuracy: | ±2dB (-130 to -80 dBm: RF I/O port)<br>±4dB (other levels and ports, 3 MHz to 1 GHz) |
| Duplex Gen.: | 0 to ± 55 MHz offset |

| **Monitor Receiver** | |
|---|---|
| Modes: | FM/AM |
| Freq. Range: | 400 kHz to 1 GHz |
| Resolution: | 100 Hz |
| Sensitivity: | 2.0 uv above 10 MHz on NBFM, 10 uv above 10 MHz on WBFM |
| Freq. Error Meter Res.: | 1 Hz |

## SPECIFICATIONS (CONT)

| **Signal Strength Meter** | |
|---|---|
| Range: | 1 MHz to 1 GHz |
| Sensitivity: | –95 dBm (Antenna Port) |

| **Wattmeter** (Transceiver Port) | |
|---|---|
| Freq. Range: | 3 MHz to 1 GHz |
| Meas. Range: | 0.1 Watt to 125 Watts |
| Accuracy: | ±10% |

| **Spectrum Analyzer** (See & Hear™) | |
|---|---|
| Freq. Range: | 400 kHz to 1 GHz |
| Dispersion: | 20 kHz to 1 MHz per division |
| Dynamic Range: | 60 dB |
| Sensitivity: | –95 dBm |

| **Display** | |
|---|---|
| CRT size: | 9 cm x 11 cm (approx. 7″ diag.) Raster Scan Display with four intensity levels |

| **Preset Channel Scanner** | |
|---|---|
| Range: | 20 MHz to 1 GHz (scanning receiver) |
| Resolution: | 1 Hz |
| Preselects: | 20 channel memory |

| **Audio Synthesizer** | |
|---|---|
| Freq. Range: | 10 Hz to 20 kHz |
| Level Accuracy: | ±1 dB |
| Fixed 1 kHz Tone Gen. Distortion: | <1% |
| Modulation Types: | PL, DPL, DTMF, SELECT V Single tone, 10 tone general sequence |

| **Oscilloscope** | |
|---|---|
| Frequency Response: | 0 to 50 kHz |
| Vertical Input Ranges: | 10 mV to 10V per division |
| Accuracy: | 5% of full scale all ranges |
| Sweep Ranges: | 20 µsec to 1 sec per division |
| Trigger: | Automatic, normal, and single sweep |

## SPECIFICATIONS (CONT)

| **Decoding** | |
|---|---|
| Modulation Types: | PL (period counter to 20 kHz), DPL, DTMF, SELECT V |

| **Time Base** | |
|---|---|
| Std. TCXO: | Aging – 1 ppm<br>Temp. – 1 ppm |
| Opt. OCXO: | Aging – 0.5 ppm<br>Temp. – 0.05 ppm |

| **Interface Ports** |
|---|
| Remote |

## MODEL NOMENCLATURE

| | |
|---|---|
| R-2550A | (with TCXO) |
| R-2550AHS | (with OCXO high stability timebase) |

| **Factory Installed Option Chart** *(Order as additional line items with Basic Model R-2550A)* | |
|---|---|
| 10 MHz Tracking Generator | RLN-4422A |

| **Accessories Supplied** | |
|---|---|
| BNC to N Adapter | 58-84300A98 |
| DC Power Connector Kit | RPX-4097A |
| Signal Generator Termination (50 Ohm) | 58-80386B73 |
| Operator Manual | 68-80309E56 |
| Power Cord | 30-80397A62 |
| Spare RF Fuses | GG-6530277C002 |

| **Optional Accessories** | |
|---|---|
| Antenna | TEKA-24A |
| Battery Pack | RPN-4000A |
| Canvas Case | 15-80357B77 |
| Transit Case | 15-80388B06 |
| Maintenance Manual | RLN-4120C |
| Microphone | HMN-1056D |
| Oscilloscope Probe | RTL-4011A |
| RF Detector Probe | RTL-4075A |
| RF 50 Ohm Terminated Detector | 58-80345B96 |
| Telescoping Antenna | RTA-4000A |
| RS-232 Interface Cable (DB25 male to DB9 female) | 30-80387B59 |
| RS-232 Adapter for computer port (DB9 male to DB25 female) | HLN-9390A |
| RS-232 Programming Manual | 68-80309E55 |

**For further information in the U.S., call** 1-800-505-TEST (1-800-505-8378)
Outside the U.S., contact your nearest Motorola representative.

**Test Equipment Bulletin Board**
Dial 713-537-8564 for our new computer bulletin board system (up to 14.4k, 8,N,1). The Bulletin Board System (BBS) can provide you with application notes, technical information as well as other pertinent files.

**Support Services**
For service on your Motorola test equipment in the U.S., contact the Motorola Test Equipment Service Depot:

1308 Plum Grove Road
Schaumburg, Il., 60173
1-800-323-6967

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R3-9-88B

**MOTOROLA**

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